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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/587,299	07/26/2006	Matthias Koch	MERCK-3215	6534
23599 7590 02/25/2009 MILLEN, WHITE, ZELANO & BRANIGAN, P.C. 2200 CLARENDON BLVD. SUITE 1400 ARLINGTON, VA 22201				
EXAMINER				
SASTRI, SATYA B				
ART UNIT		PAPER NUMBER		
1796				
MAIL DATE		DELIVERY MODE		
02/25/2009		PAPER		

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

### Office Action Summary

**Application No.**

10/587,299

**Applicant(s)**

KOCH ET AL.

**Examiner**

SATYA B. SASTRI

**Art Unit**

1796

**Period for Reply** -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 26 July 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-21 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-21 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SF/ICE)
- Paper No(s)/Mail Date 9/1/06, 7/26/06

- 4) ☐ Interview Summary (PTO-413)
- Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☒ Other: DERWENT Abstract of DE 19923625 A1



### **DETAILED ACTION**

1. This office action is in response to application filed on July 26, 2006. Claims 1-21 are now pending in the application.

#### ***Claim Objections***

2. Claims 2-4, 8, 11-14, 16, 17, 21 are objected to for the following informalities:

In claim 2, “and/or” implies that all metal oxides or hydroxides may be used. Applicants should replace “and/or” by “or”. Additionally, applicants may amend appropriately if mixtures thereof are to be included (provided the limitations are adequately supported by the specification).

Claims 3, 4, 8, 11-14, 16, 17 and 21 are objected for reciting a broad limitation and a narrow limitation. Claims are interpreted in the broadest reasonable manner.

In claim 11, the word “lye” should be deleted.

Claims 8-17 are directed to process and depend on claim 1. Given that claim 1 is directed to a product made by the process, presently cited claims are construed as product claims and not as process claims in the rejections set forth below.

Appropriate corrections are required.

#### ***Claim Rejections - 35 USC § 112***

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 9, 18 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 18 provides for the use of nanoparticles, but, since the claim does not set forth any steps involved in the method/process, it is unclear what method/process applicant is intending to encompass. A claim is indefinite where it merely recites a use without any active, positive steps delimiting how this use is actually practiced.

Claim 18 is rejected under 35 U.S.C. 101 because the claimed recitation of a use, without setting forth any steps involved in the process, results in an improper definition of a process, i.e., results in a claim which is not a proper process claim under 35 U.S.C. 101. See for example *Ex parte Dunki*, 153 USPQ 678 (Bd.App. 1967) and *Clinical Products, Ltd. v. Brenner*, 255 F. Supp. 131, 149 USPQ 475 (D.D.C. 1966).

In claim 9, the claim language is unclear. Further, the phrase “the precursor emulsion” lacks antecedent basis.

***Claim Rejections - 35 USC § 102 and 103***

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 1, 2, 4, 8-20 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Giesecke et al. (US 6,489,382 B1).

Giesecke et al. disclose solids comprising at least one particulate solid and a water dispersible graft polymer built from one hydrophobic ethylenically unsaturated monomer optionally, one hydrophilic monomer and at least one protective colloid (abstract, col. 6, lines 35-45).

Suitable hydrophilic monomers and hydrophobic monomers are disclosed in col. 6, lines 47-67, col. 7, lines 1-6 and include quaternary ammonium salts of acrylic monomers. The graft polymers may have a molecular weight ranging from 500-500,000 (col. 10, lines 38-40).

With regard to the pigment particles, oxides of titanium, zinc and zirconium are disclosed (col. 3, lines 33-39). The solid particles have particle size preferably less than 10 microns while ceramic non oxide particles may have particle size ranging from 0.1 to 50nm (col. 3, lines 1-11). Further, working example 5 discloses zirconium dioxide with a particle diameter of 700 nanometers.

The aqueous dispersions may be converted to dry form in a variety ways to recover the pigment particles (col. 23, lines 7-26). Further, the formulations demonstrate excellent

compatibility with hydrophobic media and are outstandingly wettable in synthetic and natural polymers (col. 24, lines 5-17, claim 1, 6, 17, 20).

Given that the present claims are product by process claims and given that the compositional limitations are met, presently cited claims are anticipated by the prior art. In the alternative, it would have been obvious to one of ordinary skill in the art that the presently claimed product reads on the product disclosed by Giesecke et al. absent evidence to the criticality of the claimed process. Where product by process claims are rejected over a prior art product that appears to be the same, the burden is shifted to applicants to establish an unobvious difference, even if the production processes are different. In *re Marosi*, 218 USPQ 289 (Fed. Cir. 1983). Furthermore, the patentability of a product claim rests on the product formed and not on the method by which it is produced. In *re Thorpe*, 227, USPQ 984 (Fed. Cir. 1985).

With regard to claim 4, the presently cited property must be inherent to the composition.

With regard to claim 12, the disclosed compositions may non-ionic dispersants (col. 10, lines 15-21).

With regard to claim 18-20, compositions comprising nanoparticles and synthetic or natural polymers are implicit given the teaching that the nanoparticles are readily dispersible in synthetic or natural polymers (col. 24, lines 5-15, col. 22, lines 20-34, claim 20). The nanoparticles as recited in instant claim 2 read disclosed nanoparticles, the nanoparticles of Giesecke et al. must inherently result in UV stabilization of the compositions as claimed presently.

8. Claims 1-19, 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Giesecke et al. (US 6,489,382 B1) in view of Takaki et al. (US 6,593,408 B1) and Hempelmann et al. (DE 19923625 A1 (DERWENT abstract)).

The discussion with regard to Giesecke et al. above in paragraph 7 is incorporated herein by reference.

The prior art is silent with regard to (1) preparing the nanoparticles in the presence of the polymeric compound and (2) conversion of aqueous precursor solution into an emulsion.

Takaki et al. is in an analogous filed or art and disclose organic/inorganic fine particle-dispersed aqueous solution having excellent stability. The inorganic fine particles have diameters less than 500 nm and are obtained by reacting a compound of a second group element with at least one organic acid or inorganic acid or salts thereof, in the presence of water-soluble or water-dispersible synthetic high molecular compound (abstract).

The water-soluble or water-dispersible synthetic high molecular compound contains ionic and nonionic hydrophilic groups (col. 10, lines 4-67, col.11, 57). Further, ethylenically hydrophilic unsaturated compounds can be copolymerized with hydrophobic unsaturated compounds to an extent that water solubility or water dispersibility is not damaged (col. 11, lines-58-67, col. 12, lines 1-53). The molecular wt. of the polymer may range from 1,000 to 5,000,000 (col. 14, lines 3-17).

The inorganic particles are prepared by reacting an aqueous solution or a suspension of water-soluble or slightly soluble compounds with organic/inorganic acids or salts in the presence of water-soluble or water-dispersible high molecular compound. The composite particles are made by a wet process in which the high molecular compound may be added either to aqueous



metal salt, or the acid component or both and the organic/inorganic composite particle precipitates out of the aqueous medium. The reaction mixture may be stirred homogeneously by rotation or supersound wave and may include organic solvents such as methanol, ethanol, isopropanol, ethylene glycol, propylene glycol and glycerin (col. 22, lines 4-15).

The organic/inorganic composite particles may be dried to remove the solvent and may be used in coating and adhesive materials, as resin modifiers etc. (col. 22, lines 61-67, col. 27, lines 40-46).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to prepare the nanoparticles of Giesecke et al. from precursors in the presence of polymeric compounds as taught by Takaki et al. because the disclosed process affords excellent dispersion stability (abstract, col. 1, lines 6-11).

Further, the prior art Hempelmann et al. is in an analogous field and discloses that when the precursor particles are dissolved in an aqueous medium and converted to an aqueous emulsion with nano-size droplets, the resulting inorganic particulate compound has a narrow nanoparticle size, ranging from 1-30nm. Thus, it would have been with the level of ordinary skill in the art to convert the precursor solution/dispersion of modified Giesecke et al. to an aqueous emulsion as taught by Hempelmann et al. and thereby arrive at the presently cited claims.

With regard to claim 9, given that it is advantageous to include the precursor as aqueous emulsion, it would be beneficial to introduce the stabilizing/dispersing polymer of Giesecke et al./Takaki et al. also as an emulsion (as opposed to an aqueous dispersion) so that the stability of the aqueous emulsion is maintained during the inorganic particle formation.

9. Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over Giesecke et al. (US 6,489,382 B1) in view of Border et al. (US 6,642,295 B2).

The discussion with regard to Giesecke et al. above in paragraph 7 is incorporated herein by reference.

The prior art is silent with regard to specific polymer compositions comprising UV stabilizing nanoparticles as claimed presently.

Secondary reference to Border et al. discloses nanocomposites comprising a variety of plastics such as PMMA, polystyrene, polycarbonate etc. (col. 5-6, example 2). Given the art recognized suitability of polymers such as PMMA, polystyrene, polycarbonate etc. as host polymers for making nanocomposites, and given the teaching that the polymer coated nanoparticles of Giesecke et al. (US 6,489,382 B1) may be used in synthetic and natural polymer compositions, it would have been within the level of ordinary skill in the art to include the nanoparticles of Giesecke et al. in host polymers of Border et al. and thereby arrive at the presently cited claim.

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. EP 1134302, cited as X-reference in the international search report does not teach the polymeric component of the product as claimed presently.

### ***Double Patenting***

11. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection

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is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

12. Claims 1-17 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-11, 16-20 of copending application no. 10/587,304 (referred to as '304, published as US 2007/0282075 A1) to Koch et al. Although the conflicting claims are not identical, they are not patentably distinct from each other for the reasons given below:

Copending claims 1-17 in '304 recite a process for the production of polymer-modified nanoparticles using copolymers made from monomers comprising hydrophobic radicals and hydrophilic radicals and product made therefrom, wherein the recited process encompasses the scope of presently claimed processes. It would have been within the level of ordinary skill in the art that the presently claimed processes are obvious variants of the processes in copending '304.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

***Conclusion***

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Satya Sastri at (571) 272 1112. The examiner can be reached on Mondays, Thursdays and Fridays, 7AM-5.30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mr. David Wu can be reached on 571-272-1114.

The fax phone number for the organization where this application or proceeding is assigned is (571) 273 8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <<http://pair-direct.uspto.gov>>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Satya B Sastri/

Examiner, Art Unit 1796